



U.S. Army Research, Development and Engineering Command

Building Strength in Massachusetts for Science, Technology, Engineering, Math (STEM)



TECHNOLOGY DRIVEN. WARFIGHTER FOCUSED.

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- STEM jobs are the lifeblood of DoD Labs
- STEM related jobs increasing at 2X others (more competition)
- STEM degrees awarded last 10 years has been flat nationally
- Significant retirements projected at NSRDEC in next 10 years (similar projections in industry)
- USICE restrictions have severely constrained foreign students and H1B workers since 9/11
- MA economic growth heavily dependent on STEM “knowledge cluster” industries
- Forecasted 33K person shortfall in MA STEM workers by 2010



Fueling the pipeline for Defense Careers in STEM



- Department of Defense is the Lead Organization for STEM in the US with a keen focus on K-12 outreach efforts (NSRDEC focus includes K-16)
- DoD Labs are the conduits for implementing in local and surrounding communities with support from the National Defense Education Program (NDEP)
- Fourteen States currently participating with NDEP support
- **Massachusetts has been added to the NDEP support list for FY09.**
NSRDEC act as the Army Regional Coordinator for STEM initiatives.
DoD funding set aside to support.

Massachusetts has the best availability of resources to catapult STEM initiatives and ensure we create our future STEM workforce!



DoD Coordinators have access to numerous resources:



- National Defense Education Program (NDEP) Website
 - MatLabTV (will be visiting Natick in spring)
- Center for Advancement of STEM Education (CASE)
 - Teacher Training
 - S&E Training
 - STEM Learning Modules (SLM)
- Building Engineering and Science Talent (BEST)
- Tabula Digita Math Education Video game

Pushing these resources out to the school districts requires solid partnerships in the community!



Mass Board of Higher Education Call to Action



- Establish regional networks to collaborate across K12 school districts, colleges, industry, and economic competitive groups regarding STEM education issues.
- Increase number of K16 students engaging STEM careers.
- Enhance K12 teacher qualifications in STEM subjects.
- Improve STEM offerings at K12 level.



Colleges

- Dean College
- Framingham State
- Mass Bay Community
- Olin College of Engineering
- Regis College
- Tufts Veterinary School

Economic Competitive

Non-govt Organizations

- 495/MetroWest Corridor Partnership
- ACCEPT Collaborative
- DOME Foundation
- MassBioEd Foundation
- Metro South/West Regional Employment Board
- Chambers of Commerce
 - MetroWest
 - Marlborough
 - Milford Area



K12 School Districts



- Acton-Boxborough
- Ashland
- Concord-Carlisle
- Hopedale
- Joseph P. Keefe Technical School
- Milford
- Needham
- Advanced Math & Science Academy
- Framingham
- Hopkinton
- Marlborough
- Maynard
- Natick
- Norfolk County Agricultural HS

- Arteriocyte Medical Systems
- Avencia Biotechnology, Inc.
- CONQWEST, Inc.
- Genzyme
- Mass General Hospital
- MathWorks
- Raytheon Corporation
- Thermo Fisher Scientific
- US Army RIEM
- AstraZeneca
- BOSE
- Dacon Corporation
- International Biotechnology Investment Corporation
- Microtest Laboratories, Inc.
- PerkinElmer
- TetraTech Rizzo
- US Army RDECOM



Strategic Plan Initiatives



- STEM Teacher Professional Development
- Life Science Advocacy
- Engineering Careers Advocacy
- Information Technology Advocacy



Programs that drive systemic change to... **Improve Awareness, Interest, Preparation, and Motivation**

- Teacher Professional Development
 - LIFT²
 - Biotech Careers Programs
 - STEM Elementary Professional Development
- Student/Diversity Enrichment
 - Saturday STEM Academy for Underserved Students
 - Middle School Science Fairs
 - Promote HS/College Student Internships

The Vision: Massachusetts as ***the*** Leader in Education Outreach STEM:

The Near Term Plan (next 90 days):

- Create the links in the DoD STEM and Massachusetts STEM networks
- Pilot 3-6 initiatives in Metrowest schools:
 - Deploy available STEM Learning Modules: Biodegradable Materials; Biosensors; Ceramics; Composites; Infrastructure Materials: Concrete; Polymers; Smart Sensors; Sports Materials; and Food Packaging
 - Deploy Tabula Digita at select schools
- Benchmark a model DoD program
- Explore improvements to ecybermission implementation
- Develop 3 year plan for resources/support from NDEP (due in Feb)



Longer Term Vision:

- Recruit DoD Lab S&E retirees to support initiatives
- Develop STEM Learning Modules: Future Soldier
- Link to Center for Soldier Innovation (should that come to pass)
- Broaden outreach efforts and link to State infrastructure
- Identify and support Teacher/Lab S&E training teams
- Develop and deploy rolling K-5 STEM Museum
- Identify and support Teacher/Lab S&E Math and Science Tutoring Program
- Aggressively pursue grants to support efforts to implement and sustain



- STEM education is a national priority
- DoD Labs (and the supporting Defense community) share this responsibility with educators
- Our collective efforts provide the force multiplier necessary to achieve success
- Failure is not an option